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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/780,433	02/12/2001	Kou Ishizuka	35.G2741	8139

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FITZPATRICK CELLA HARPER & SCINTO  
30 ROCKEFELLER PLAZA  
NEW YORK, NY 10112

EXAMINER

SONG, HOON K

ART UNIT PAPER NUMBER

2882

DATE MAILED: 03/03/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/780,433

Applicant(s)

ISHIZUKA, KOU

Examiner

Hoon K Song

Art Unit

2882

-- The MAILING DATE of this communication appears on the cover sheet with the corresponding address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-23 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 February 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

## DETAILED ACTION

### *Drawings*

Figure 1 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-4 are rejected under 35 U.S.C. 102(b) as being anticipated by Fukui et al. (US 5696373).

Regarding claim 1, Fukui teaches a grating interference encoder (figure 11) comprising

light-emitting device (1);

diffraction grating (22) for generating two diffracted light beams having different orders by being irradiated by a coherent light beam from an illuminating optical system;

an annular grating (21) for deflecting the two diffracted light beams having the different orders generated from said diffraction grating to cause the deflected light beams to be re-projected onto said diffraction grating; and

Art Unit: 2882

a beam splitter (8) for guiding a light beam, obtained by causing diffracted light beams generated by re-diffraction of the diffracted light beams re-projected onto said diffraction grating to be superposed and interfere with each other, to a photo-sensor and said photo-sensor (6).

Regarding claim 2, Fukui teaches that said annular grating comprises a reflection diffraction grating (23).

Regarding claim 3, Fukui teaches that said annular grating is a transmission diffraction grating (see where first beam penetrate the annular grating), wherein diffracted light beams transmitted through and diffracted by said transmission diffraction grating are reflected by a reflecting optical element, and wherein twice diffracted light beams re-diffracted by said transmission diffraction grating are projected onto said diffraction grating (figure 11).

Regarding claim 4, Fukui teaches that said annular grating is local (figure 11).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 5-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fukui in view of Eguchi et al (US 5568337).

Regarding claims 5, 8-9, 12, 15, 18 and 21-23, Fukui teaches that 5. A grating interference encoder (figure 11) comprising:

Art Unit: 2882

light-emitting device;

diffraction grating for generating two diffracted light beams having different orders by being irradiated by a coherent light beam from an illuminating optical system;

an annular gating for deflecting the two diffracted light beams having the different orders generated from said diffraction grating to cause the deflected light beams to be re-projected onto said diffraction grating;

a beam splitter for guiding a light beam, obtained by causing diffracted light beams generated by re-diffraction of the diffracted light beams re-projected onto said diffraction grating to be superposed and interfere with each other, to a photo-sensor; and

said photo-sensor.

However Fukui merely teaches a condenser.

Eguchi teaches a condenser (303) comprising a cylindrical diffraction lens.

In view of Eguchi it would have been obvious to an artisan of ordinary skill in the art at the time the invention was made to adopt the condenser in order to linear beam is directed to a single rectangular pattern made of a reflection portion and a non reflection portion(column 5 line 48+). Accordingly, one would be motivated to adopt the well known condenser in encoder art because it would provide resolution enhance process (column 5 line 20+)

Regarding claims 6, 10, 13, 16 and 19, Fukui teaches that said annular grating comprises a reflection diffraction grating (23).

Art Unit: 2882

Regarding claims 7, 11, 14, 17 and 21, Fukui teaches that said annular grating is local (figure 11).

Regarding claim 20, Fukui teaches that said annular grating is a transmission diffraction grating, wherein diffracted light beams transmitted through and diffracted by said transmission diffraction grating are reflected by a reflecting optical element, and wherein twice diffracted light beams re-diffracted by said transmission diffraction grating are projected onto said diffraction grating.


### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hoon K Song whose telephone number is 703-308-2736. The examiner can normally be reached on 8:30 AM - 5 PM, Monday - Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Kim can be reached on 703-305-3492. The fax phone numbers for the organization where this application or proceeding is assigned are 703-746-4858 for regular communications and 703-308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

Hoon K. Song  
February 11, 2003

  
**ROBERT H. KIM**  
SUPERVISOR  
TECHNOLOGY CENTER